

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

ACTION: Notice of Request for Information (RFI).

SUMMARY: The purpose of this Request for Information (RFI) is to solicit input from all interested parties regarding recommendations for the development of a National Plan for Civil Earth Observations (“National Plan”). The public input provided in response to this Notice will inform the Office of Science and Technology Policy (OSTP) as it works with Federal agencies and other stakeholders to develop this Plan.

DATES: Responses must be received by December 6, 2013 to be considered.

SUBMISSION: You may submit comments by any of the following methods.

- **Downloadable form:** To aid in information collection and analysis, OSTP encourages responses to be provided using this form. Please enter your responses in the fillable fields that follow the questions below.
- **Email:** OSTP encourages respondents to email the completed form, as an attachment, to earthobsplan@ostp.gov. Please include “National Plan for Civil Earth Observations” in the subject line of the message.
- **Fax:** (202) 456-6071.
- **Mail:** Office of Science and Technology Policy, 1650 Pennsylvania Avenue, NW, Washington, DC, 20504. Information submitted by postal mail should allow ample time for processing by security.

Response to this RFI is voluntary. Respondents need not reply to all questions listed. Each individual or institution is requested to only submit one response. Responses to this RFI, including the names of the authors and their institutional affiliations, if provided, may be posted on line. OSTP therefore requests that no business proprietary information, copyrighted information, or personally-identifiable information be submitted in response to this RFI. Given the public and governmental nature of the National Plan, OSTP deems it unnecessary to receive or to use business proprietary information in its development. Please note that the U.S. Government will not pay for response preparation, or for the use of any information contained in the response.

FOR FURTHER INFORMATION CONTACT:

Timothy Stryker, 202-419-3471, tstryker@ostp.eop.gov, OSTP.

SUPPLEMENTARY INFORMATION:

Background

The U.S. Government is the world's largest single provider of civil environmental and Earth-system data. These data are derived from Earth observations collected by numerous Federal agencies and partners in support of their missions and are critical to the protection of human life and property; economic growth; national and homeland security; and scientific research. Because they are provided through public funding, these data are made freely accessible to the greatest extent possible to all users to advance human knowledge, to enable industry to provide value-added services, and for general public use.

Federal investments in Earth observation activities ensure that decision makers, businesses, first responders, farmers, and a wide array of other stakeholders have the information they need about climate and weather; natural hazards; land-use change; ecosystem health; water; natural resources; and other characteristics of the Earth system. Taken together, Earth observations provide the indispensable foundation for meeting the Federal Government's long-term sustainability objectives and advancing the Nation's societal, environmental, and economic well-being.

As the Nation's capacity to observe Earth systems has grown, however, so has the complexity of sustaining and coordinating civil Earth observation research, operations, and related activities. In October 2010, Congress charged the Director of OSTP to address this challenge by producing and routinely updating a strategic plan for civil Earth observations (see *National Aeronautics and Space Administration Authorization Act of 2010, Public Law 111-267, Section 702*).

Responding to Congress, in April 2013, OSTP released a [National Strategy for Civil Earth Observations](#) ("the National Strategy").

In April 2013, OSTP also re-chartered the U.S. Group on Earth Observations (USGEO) Subcommittee of the National Science and Technology Council's Committee on Environment, Natural Resources, and Sustainability. USGEO will carry out the National Strategy and support the formulation of the National Plan.

As requested by Congress, the National Plan is being developed by USGEO to advise Federal agencies on the Strategy's implementation through their investments in and operation of civil Earth observation systems. The Plan will provide a routine process, on a three-year cycle, for assessing the Nation's Earth observation investments; improving data management activities; and enhancing related interagency and international coordination. Through this approach, the Plan will seek to facilitate stable, continuous, and coordinated Earth observation capabilities for the benefit of society.

Congress also requested that development of the National Plan include a process for collecting external independent advisory input. OSTP is seeking such public advisory input through this RFI. The public input provided in response to this Notice will inform OSTP and USGEO as they work with Federal agencies and other stakeholders to develop the Plan.

Definitions and Descriptions

The term “**Earth observation**” refers to data and information products from Earth-observing systems and surveys.

“**Observing systems**” refers to one or more sensing elements that directly or indirectly collect observations of the Earth, measure environmental parameters, or survey biological or other Earth resources (land surface, biosphere, solid Earth, atmosphere, and oceans).

“**Sensing elements**” may be deployed as individual sensors or in constellations or networks, and may include instrumentation or human elements.

“**Observing system platforms**” may be mobile or fixed and are space-based, airborne, terrestrial, freshwater, or marine-based. Observing systems increasingly consist of integrated platforms that support remotely sensed, *in-situ*, and human observations.

Assessing the Benefits of U.S. Civil Earth Observation Systems

To assist decision-makers at all levels of society, the U.S. Government intends to routinely assess its wide range of civil Earth observation systems according to the ability of those systems to provide relevant data and information about the following Societal Benefit Areas (SBAs):

1. Agriculture and Forestry
2. Biodiversity
3. Climate
4. Disasters
5. Ecosystems (Terrestrial and Freshwater)
6. Energy and Mineral Resources
7. Human Health
8. Ocean and Coastal Resources and Ecosystems
9. Space Weather
10. Transportation
11. Water Resources
12. Weather

The U.S. Government also intends to consider how current and future reference measurements (*e.g.*, bathymetry, geodesy, geolocation, topography) can enable improved observations and information delivery.

To address measurement needs in the SBAs, the U.S. Government operates a wide range of atmospheric, oceanic, and terrestrial observing systems. These systems are designed to provide: (a) sustained observations supporting the delivery of services, (b) sustained observations for research, or (c) experimental observations to address specific scientific questions, further technological innovation, or improve services.

Questions to Inform Development of the National Plan

Name (optional): Scott McLaughlin

Position (optional): VP, DeTect, Inc., Meteorological Systems Division

Institution (optional): DeTect, Inc., www.detect-inc.com Meteorological Systems Division, Longmont, CO 80501; (303) 848-8090

Through this RFI, OSTP seeks responses to the following questions:

1. Are the 12 SBAs listed above sufficiently comprehensive?

They appear to be comprehensive, but one is added below. I invite readers to perform a web search of “radar aeroecology” to better understand this relatively new field.

- a. Should additional SBAs be considered?

Radar Aeroecology is becoming a formalized field of study whereby radar systems such as NWS NEXRAD, other S- and X- band radars, and radar wind profilers are used to sense and document insect and bird activity (local movement or migration). These measures are important for farming (e.g., understanding pest insect movement), wind energy (e.g., understanding local and migratory bird movement, especially of protected species), studying specific species (e.g., Mexican free tailed bat), as well as developing a larger understanding of ecological changes over large areas due to climate changes. Low-level NEXRAD (WSR-88D) data, especially taking advantage of the new dual-polarization capability, is now available and there is a tremendous amount of information available, which is only now being studied. This is a previously untapped resource as we have become slowly aware of the enormous amount of activity and biomass which is constantly above us, using the atmosphere as a superhighway. Since this understanding is relatively new, there only exists a patchwork of biologist, meteorologists and radar specialist who are teasing apart weather and climate relationships airborne biology and the implications to human activities. This should be overlooked as a significant and important database.

- b. Should any SBA be eliminated?

No comment

2. Are there alternative methods for categorizing Earth observations that would help the U.S. Government routinely evaluate the sufficiency of Earth observation systems?

No comment

3. What management, procurement, development, and operational approaches should the U.S. Government employ to adequately support sustained observations for services, sustained observations for research, and experimental observations? What is the best ratio of support among these three areas?

I can only speak directly about wind profiling radar systems. The US has operated the NOAA Profiler Network (<http://www.profiler.noaa.gov/npn/>) for over 20 years. The data from this network has aided in severe storm prediction and nowcasting, as well as for aviation and numerical models (even airborne volcanic ash movement in Alaska). The NPN was slated for a full upgrade over the last several years, but the available money was not spent for the intended purpose by the NWS, and there have been no upgrades performed and the current network is slowly dying. Many research articles (e.g., "The Value of Wind Profiler Data in U.S. Weather Forecasting", <http://journals.ametsoc.org/doi/abs/10.1175/BAMS-85-12-1871>) have shown the worth of the NPN. The data has been widely used for services, research and improving the computer models. The NPN data is most useful and most interesting when variable weather conditions are in play. During 'normal' flow conditions, the data has low impact on the models, but when severe weather, cold fronts, etc., are on the move, the NPN data has shown significant value.

4. How should the U.S. Government ensure the continuity of key Earth observations, and for which data streams (e.g., weather forecasting, land surface change analysis, sea level monitoring, climate-change research)?

Currently the U.S. Government has not been consistent in funding research or operations for some new systems. Congress approved and funded the Next Generation NOAA Profiler Network, but the money has not flowed as intended. It takes millions of dollars for government agency to research and develop new technologies and understand their value to the country. NOAA research laboratories have been the leaders in radar wind profiler technology since the late 1970's. NOAA and the NWS implemented this technology in the late 1980's. Now however, the expertise and data are being lost, almost completely. Few government engineers and researchers are left and the network is being almost deliberately killed. This site <http://www.profiler.noaa.gov/npn/profiler.jsp> shows green dots for the existing wind profilers, but once a system is selected for data, there is none there. Including the procurement already held for the replacement systems, the loss of money and expertise is colossal. We are proud to be the only US manufacturer of these systems, but we would not be here without the work previously performed by NOAA. It is sad to see the investment wasted and loss of the data products.

5. Are there scientific and technological advances that the U.S. Government should consider integrating into its portfolio of systems that will make Earth observations more efficient, accurate, or economical? If so, please elaborate.

If the U.S. Government will not consistently fund new systems, perhaps it should consider outsourcing the data requirement for private industry to fulfill.

6. How can the U.S. Government improve the spatial and temporal resolution, sample density, and geographic coverage of its Earth observation networks with cost-effective, innovative new approaches?

Upper air measurements are made with helium filled balloon radiosonde systems launched every 12 hours. new technology such as ground-based passive microwave radiometers and new wind profiling radars can make similar measurements every 5 minutes. These are not being deployed or even much studied anymore by NOAA due to lack of funds. Radiosonde systems might not go away for many many years, but to ignore the latest technology, without even test or demonstration sites is kind of reckless. The U.S. used to be the leader in these technologies, but its leadership is fading quickly.

7. Are there management or organizational improvements that the U.S. Government should consider that will make Earth observation more efficient or economical?

Since NOAA and especially the NWS are often slow to implement new technologies, the U.S. should consider demonstration or test beds which focus on private sector solutions to providing data. In years past, the technology and transport of data was too complicated and was legitimately a government function. This has changed however and perhaps the government should step back a bit to allow more private sector leadership...if the government cannot or will not.

In the case of the NOAA Profiler Network, there have been many articles about the worth of these system, both for the country and in their general use worldwide. What seems almost devious though, is despite the Congressional appropriation of funds to upgrade the network (and the various studies justifying it: http://www.nws.noaa.gov/ost/coea/COEA_May26_final.pdf and http://www.nws.noaa.gov/ost/coea/NPN_Value_Brief.pdf) the current NPN is willfully and deliberately being underfunded, apparently to create a slow death which no one notices. It is ironic to fill out this survey about improving our Country's observational infrastructure while the same Government

One final note is that much of the ground-based observational network decisions have been driven by financial issues created by the satellite cost-overruns. It is a travesty of sorts to manage billion dollar projects in the same stovepipe as million dollar projects. Every time the satellite program catches a cold, several other completely unrelated ground-based initiatives are sacrificed to pay the bill. The folks with the cost-overruns should have to pay for their own mistakes, not the dozens of other vital programs. There is a huge organization issue which is slowly strangling many small NOAA programs, and NOAA and the NWS have no choice but to claim the smaller projects are not needed (since they do not know how to pay the bill otherwise and do not want to ask Congress for further funds). Their needs to be more transparency in the current redirection of money and a reorganization to put satellites in their own financial territory, or even under NASA where they understand better how to manage the design, production and operation procurement.

8. Can advances in information and data management technologies enable coordinated observing and the integration of observations from multiple U.S. Government Earth observation platforms?

I believe this is a government function, but otherwise have no further comment.

9. What policies and procedures should the U.S. Government consider to ensure that its Earth observation data and information products are fully discoverable, accessible, and useable?

The data should be available on the web.

10. Are there policies or technological advances that the U.S. Government should consider to enhance access to Earth observation data while also reducing management redundancies across Federal agencies?

Since “climate” became a dirty word, the pursuit of climate and weather data has become convoluted with funding issues part of the confusion. The impacts to nation should be studied to understand what price we are paying by delaying solid research and implementation of new technologies.

11. What types of public-private partnerships should the U.S. Government consider to address current gaps in Earth observation data coverage and enhance the full and open exchange of Earth observation data for national and global applications?

Private companies can better fill the gap in old in new technologies. Test beds should be created where NOAA and the NWS and private companies can experiment and learn how to partner to deliver state-of-the-art data products. Once the demonstration kinks are worked out, wider implementation should follow. Or the U.S. Government can go it alone, buying and implementing the technologies, but the funding must be solid.

12. What types of interagency and international agreements can and should be pursued for these same purposes?

No comment.